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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,262	10/10/2003	Kiwamu Morita	60048 (70904)	1726
21874	7590	07/18/2006	EXAMINER	
EDWARDS & ANGELL, LLP			THANGAVELU, KANDASAMY	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	
			2123	

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/684,262

Applicant(s)

MORITA ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                      |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                          | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                                 | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>January 9, 2004</u> . | 6) <input type="checkbox"/> Other: _____                                                |

### **DETAILED ACTION**

1. Claims 1-9 of the application have been examined.

#### ***Foreign Priority***

2. Acknowledgment is made of applicant's claim for foreign priority based on an application 2002-299572 filed in Japan on October 11, 2002. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

3. Acknowledgment is made of the information disclosure statements filed on January 7, 2004 together with a list of patents. The patents have been considered.

#### ***Drawings***

4. The drawings submitted on October 10, 2003 are accepted.

#### ***Abstract***

5. The abstract is objected to because of the following informalities:

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Lines 17-18, "frequency or amplitude of the oscillation in the osculation system falls within the acceptable range" appears to be incorrect and it appears that it should be "frequency and amplitude of the oscillation in the oscillation system fall within the acceptable ranges".

Appropriate correction is required.

### ***Specification***

6. The disclosure is objected to because of the following informalities:

Page 7, Lines 22-23, "a gear with a small module" is not understood. What is a gear with a small module?

Page 31, Lines 18-24, "If the calculated ... smaller than the desired calculation frequency or if the calculated ... smaller than the desired amplitude, the system judges that the oscillation generated in the designed gear driving system is within acceptable range" appears to be incorrect and it appears that it should be "If the calculated ... smaller than the desired calculation frequency and if the calculated ... smaller than the desired amplitude, the system judges that the oscillation generated in the designed gear driving system is within acceptable range".

Page 32, Lines 17-18, "the oscillation frequency and/or the amplitude becomes smaller than desired values" appears to be incorrect and it appears that it should be "the oscillation frequency and the amplitude becomes smaller than desired values".

Page 34, Line 22, "the oscillation frequency or amplitude is reduced" appears to be incorrect and it appears that it should be "the oscillation frequency and amplitude are reduced".

Page 41, Lines 18-21, "at least one of the oscillation frequency and the oscillation amplitude ... fall within acceptable range" appears to be incorrect and it appears that it should be "both the oscillation frequency and the oscillation amplitude ... fall within acceptable ranges".

Page 42, Lines 7-10, "at least one of the oscillation frequency and the oscillation amplitude ... fall within acceptable range" appears to be incorrect and it appears that it should be "both the oscillation frequency and the oscillation amplitude ... fall within acceptable ranges".

Appropriate corrections are required.

### ***Claim Objections***

7. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

8. Claims 2, 4-5 and 8 are objected to because of the following informalities:

Claim 2, Lines 15-17, ““when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall within the acceptable range” appears to be incorrect and it appears that it should be ““when both the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall within the acceptable ranges”.

Claim 4, states in part “A program for causing a computer to operate as:

a setting section for...;

a calculating section for ...;

a judging section for ...;

a setting changing section for ....

A program claim should not be written as what its parts or sections do but as what it comprises of. The program comprises of instruction for performing various steps of the method.

Claim 5, states in part “The program as set forth in claim 4,

wherein the calculating section includes:

an equation creating section for ...;

an equation analyzing section for ...;

wherein the judging section judges ....

A program claim should not be written as what its parts or sections do but as what it comprises of. The program comprises of instruction for performing various steps of the method.

Claim 5, Lines 14-16, ““when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall within the acceptable range” appears to be incorrect and it appears that it should be ““when both the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall within the acceptable ranges”.

Claim 8, Lines 13-16, ““when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing step fall within the acceptable range” appears to be incorrect and it appears that it should be ““when both the oscillation frequency and the oscillation amplitude determined by the equation analyzing step fall within the acceptable ranges”.

Appropriate corrections are required.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled

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in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

10.1 Claim 1 states in part, “a setting section for setting a **gear characteristic value** for a gear driving system; and a setting changing section for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range”.

It is not clear what this characteristic value is. The specification does not specifically state what this characteristic value is and what the associated parameter is.

The specification states, at Page 2, Para 2 that the gear driving system has focused on gear dimension and gear material to obtain desired characteristics such as reduction ratio or torque output. Does this mean **this characteristic value set is gear dimension or material or gear reduction ratio or torque output?**

Page 5, Para 2 states, “to determine the characteristics of the gears as to whether, for example, **how many teeth should each gear have** to minimize oscillation”. Does it mean that the gear characteristic value is the number of teeth in each gear?

Page 20, Para 3 states, “Some of the gear characteristics set by the characteristic setting section include: acceptable range of pitch distance, ... acceptable range of reduction ratio ..., output torque of final gear, the number of revolutions and the module (what is a module?) of the input gear, number of reduction gears; other characteristics set ... include : number of revolutions in the final gear, number of teeth on each gear, tool width, tool strength, tool material, tooth durability and the diameter, length and the supporting method of the gear supporting shaft.”.. Therefore it is evident that there are numerous parameters whose values are



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set in the process contrary to the claim that “setting a gear characteristic value” and “changing the gear characteristic value set”. The specification does not state how the various combinations of the numerous parameters listed are selected and changed in the process.

10.2 Claim 4 states in part, “a setting section for setting **a gear characteristic value** for a gear driving system; and a setting changing section for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range”.

It is not clear what this characteristic value is. The specification does not specifically state what this characteristic value is and what the associated parameter is.

10.3 Claim 7 states in part, “a setting step for setting **a gear characteristic value** for a gear driving system; a setting changing step for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range; and the gear characteristic value being outputted as an optimum gear characteristic when the oscillation in the final gear is judged to fall within the acceptable range”.

It is not clear what this characteristic value is. The specification does not specifically state what this characteristic value is and what the associated parameter is.

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

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11. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

11.1 Claim 1 states in part, “a setting section for setting **a gear characteristic value** for a gear driving system; and a setting changing section for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range”.

It is not clear what this characteristic value is. The specification does not specifically state what this characteristic value is and what the associated parameter is.

The specification states, at Page 2, Para 2 that the gear driving system has focused on gear dimension and gear material to obtain desired characteristics such as reduction ratio or torque output. Does this mean **this characteristic value set is gear dimension or material or gear reduction ratio or torque output?**

Page 5, Para 2 states, “to determine the characteristics of the gears as to whether, for example, **how many teeth should each gear have** to minimize oscillation”. Does it mean that the gear characteristic value is the number of teeth in each gear?

Page 20, Para 3 states, “Some of the gear characteristics set by the characteristic setting section include: acceptable range of pitch distance, ... acceptable range of reduction ratio ..., output torque of final gear, the number of revolutions and the module (what is a module?) of the input gear, number of reduction gears; other characteristics set ... include : number of revolutions in the final gear, number of teeth on each gear, tool width, tool strength, tool

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material, tooth durability and the diameter, length and the supporting method of the gear supporting shaft.”.. Therefore it is evident that there are numerous parameters whose values are set in the process contrary to the claim that “setting a gear characteristic value” and “changing the gear characteristic value set”. The specification does not state how the various combinations of the numerous parameters listed are selected and changed in the process.

Therefore one of ordinary skill in the art will not be able to implement the method described by the invention and achieve the benefits claimed in the specification.

11.2 Claim 4 states in part, “a setting section for setting **a gear characteristic value** for a gear driving system; and a setting changing section for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range”.

It is not clear what this characteristic value is. The specification does not specifically state what this characteristic value is and what the associated parameter is.

11.3 Claim 7 states in part, “a setting step for setting **a gear characteristic value** for a gear driving system; a setting changing step for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range; and the gear characteristic value being outputted as an optimum gear characteristic when the oscillation in the final gear is judged to fall within the . acceptable range”.

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It is not clear what this characteristic value is. The specification does not specifically state what this characteristic value is and what the associated parameter is.

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 states in part, “a setting section for setting **a gear characteristic value** for a gear driving system; and a setting changing section for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range”. The term “a characteristic value” is vague and indefinite, since the specification lists numerous parameters as characteristic parameters in Page 20 of the specification as explained in paragraph 10.1 above. What is the value associated with the characteristic parameter?

Claim 4 states in part, “a setting section for setting **a gear characteristic value** for a gear driving system; and a setting changing section for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range”. The term “a characteristic value” is vague and indefinite, since the specification lists numerous parameters as characteristic parameters in Page 20 of the specification as explained in paragraph 10.1 above. What is the value associated with the characteristic parameter?

Claim 7 states in part, “a setting step for setting **a gear characteristic value** for a gear driving system; a setting changing step for changing **the gear characteristic value** set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range; and the gear characteristic value being outputted as an optimum gear characteristic when the oscillation in the final gear is judged to fall within the acceptable range”. The term “a characteristic value” is vague and indefinite, since the specification lists numerous parameters as characteristic parameters in Page 20 of the specification as explained in paragraph 10.1 above. What is the value associated with the characteristic parameter?

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

***Claim Rejections - 35 USC § 102***

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14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

15. Claims 1-9 are rejected under 35 U.S.C. § 102(e) as being anticipated by **Koide** (U.S. Patent Application 2002/0085086).

15.1 **Koide** teaches device for driving an endless belt and image forming apparatus using the same. Specifically, as per claim 1, **Koide** teaches a gear-driving-system designing system (Page 1, Para 0012, 2-7), comprising:

a setting section for setting a gear characteristic value for a gear driving system (Page 3, Para 0060, to Page 4, Para 0065);

a calculating section for simulating an oscillation in a final gear of the gear driving system, based on the gear characteristic value set in the setting section (Page 3, Para 0060, to Page 4, Para 0065);

a judging section for judging whether or not the oscillation in the final gear determined by the simulation in the calculating section is within an acceptable range (Page 2, Para 0017 and Para 0015; Fig 29; Page 3, Para 0048; Page 12, Para 0184); and

a setting changing section for changing the gear characteristic value set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range (Page 12, Para 0177, L3-15; Page 12, Para 0184).

Per claim 2: **Koide** teaches that the calculating section (Page 3, Para 0060, to Page 4, Para 0065) includes:

an equation creating section for creating an equation of oscillation motion for a predetermined oscillation system in the gear driving system, using the gear characteristic value set in the setting section (Page 3, Para 0060, to Page 4, Para 0065); and

an equation analyzing section for solving the equation of oscillation motion created by the equation creating section, so as to determine an oscillation frequency and an oscillation amplitude of the oscillation system (Fig. 29; Page 3, Para 0048; Page 12, Para 0184), and

wherein the judging section judges that the oscillation in the final gear is within the acceptable range when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall within the acceptable range (Page 2, Para 0017 and Para 0015; Fig 29; Page 3, Para 0048; Page 12, Para 0184).

Per claim 3: **Koide** teaches that the oscillation system used in the equation creating section is a gear pair of the final gear and a driving gear of the final gear in the gear driving system (Page 12, Para 0184).

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15.2 As per Claims 4-6, these are rejected based on the same reasoning as Claims 1-3, supra. Claims 4-6 are computer program claims reciting the same limitations as Claims 1-3, as taught throughout by **Koide**.

15.3 As per claim 7, **Koide** teaches a gear-driving-system designing method (Page 1, Para 0012, 2-7), comprising:

- a setting step of setting a gear characteristic value for a gear driving system (Page 3, Para 0060, to Page 4, Para 0065);

- a calculating step of simulating an oscillation in a final gear of the gear driving system, based on the gear characteristic value set in the setting section (Page 3, Para 0060, to Page 4, Para 0065);

- a judging step of judging whether or not the oscillation in the final gear determined by the simulation in the calculating section is within an acceptable range (Page 2, Para 0017 and Para 0015; Fig 29; Page 3, Para 0048; Page 12, Para 0184); and

- a setting changing step of changing the gear characteristic value set in the setting section, when the judging section judges that the oscillation in the final gear does not fall within the acceptable range (Page 12, Para 0177, L3-15; Page 12, Para 0184);

- the setting changing step, the calculating step, and the judging step being repeated until the oscillation in the final gear is judged to fall within the acceptable range in the judging step (Page 12, Para 0184), and the gear characteristic value being outputted as an optimum gear characteristic when the oscillation in the final gear is judged to fall within the acceptable range (Page 12, Para 0184).



Per claim 8: **Koide** teaches that the calculating step (Page 3, Para 0060, to Page 4, Para 0065) includes:

an equation creating step of creating an equation of oscillation motion for a predetermined oscillation system in the gear driving system, using the gear characteristic value set in the setting section (Page 3, Para 0060, to Page 4, Para 0065); and

an equation analyzing step of solving the equation of oscillation motion created by the equation creating section, so as to determine an oscillation frequency and an oscillation amplitude of the oscillation system (Fig. 29; Page 3, Para 0048; Page 12, Para 0184), and

wherein the judging section judges that the oscillation in the final gear is within the acceptable range when at least one of the oscillation frequency and the oscillation amplitude determined by the equation analyzing section fall within the acceptable range (Page 2, Para 0017 and Para 0015; Fig 29; Page 3, Para 0048; Page 12, Para 0184).

Per claim 9: **Koide** teaches that the oscillation system used in the equation creating step is a gear pair of the final gear and a driving gear of the final gear in the gear driving system (Page 12, Para 0184).

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

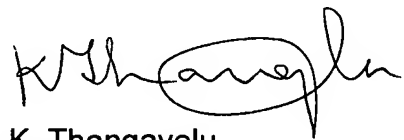
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571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'K. Thangavelu', with a large, stylized loop at the end.

K. Thangavelu  
Art Unit 2123  
July 8, 2006